



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604**

SUBJECT: CLEAN AIR ACT INSPECTION REPORT
Renergy, Inc., Fairborn, Ohio

FROM: Natalie Schulz, Environmental Engineer
AECAB (MN/OH)

THRU: Brian Dickens, Section Supervisor
AECAB (MN/OH)

TO: File

BASIC INFORMATION

Facility Name: Dovetail Energy, LLC

Facility Location: 1156 Herr Road, Fairborn, Ohio 45324 (0 EJ indices >80th percentile, U.S. Census Block Group)

Date of Inspection: November 9, 2022

EPA Inspector(s):

1. Natalie Schulz, Environmental Engineer
2. Tess Russell, Environmental Engineer
3. Brian Dickens, Section Supervisor

Other Attendees:

1. Jeff Williamson, Operator
2. Shane Eagle, Operator
3. Michael Oberfield, Chief Operating Officer

Contact Email Address: alex@renergy.com

Purpose of Inspection: To determine compliance with the facility's Permits to Install and Operate (PTIO) #P0124072 and #P0127783

Facility Type: Anaerobic digester system with electricity generation

Regulations Central to Inspection: Federally enforceable conditions in permits-to-install and operate, Ohio SIP

Arrival Time: 8:10 a.m.

Departure Time: 11:00 a.m.

Inspection Type:

- ☒ Unannounced Inspection
- ☐ Announced Inspection

OPENING CONFERENCE

- ☒ Presented Credentials
- ☒ Stated authority and purpose of inspection
- ☐ Provided Small Business Resource Information Sheet
- ☒ Small Business Resource Information Sheet not provided. Reason: Previously provided.
- ☒ Provided CBI warning to facility

The following information was obtained verbally from Jeff Williamson and Shane Eagle unless otherwise noted.

Process Description: The facility operates Monday through Friday from 6:00 a.m. to 4:00 p.m., with occasional operations on Saturdays. Solid and liquid waste material is received via truck. The liquid waste material is unloaded from the trucks via hose into an underground holding tank that has a capacity of approximately 18,000 gallons. The solid waste material is dumped into an underground holding pit that can hold approximately thirty tons of waste. Waste from a nearby pig farm is also pumped to the facility through a manure transfer station. From the holding tank, the material is pumped into the biomass tank. There is a gas line on the top of the biomass tank leading to the anaerobic digester; the valves on the gas line are always open. The biomass tank also has one pressure relief valve for safety purposes. Both the biomass tank and the anaerobic digester are equipped with radar sensor to monitor for foaming events. After the biomass tank, the material is pumped into the anaerobic digester.

In the anaerobic digester, the waste is heated, exposed to microbes, and undergoes methanogenesis to produce methane. From the anaerobic digester, the sludge is pumped to an uncovered, concrete sludge lagoon; the sludge lagoon acts as a storage area until the sludge is used for land application. The gas from the anaerobic digester, mostly comprised of methane and carbon dioxide, is sent to either the engine for electricity generation or the flare. Electricity is sold and sent to the grid. There are two pressure relief valves on the anaerobic digester that can release the digester gas to the atmosphere; according to the permit, the digester gas is not allowed to build up in any tank that would induce emergency venting through the pressure relief valves to the atmosphere. The anaerobic digester is equipped with a desulfurization system that injects air into the digester to reduce hydrogen sulfide levels; the permit limits the level of hydrogen sulfide in the digester gas burned in the flare or the engine to 1,000 ppm. Iron is also

added at the anaerobic digester to reduce hydrogen sulfide levels. EPA has previously requested records of the hydrogen sulfide levels, as well as the heat content level of the digester gas burned in the flare or the engine. The permit requires the digester gas to have a minimum heat content of 500 btu/scf.

The air from the basement, underground area, and indoor facility is pumped through a mulch biofilter for odor control. The facility changes the media in the biofilter approximately twice per year. The biofilter is not required by the permit.

Staff Interview: The engine was not operational at the time of the inspection due to a problem with the oil cooler; the issue began on Friday, 11/4/22. The flare was not operational from Saturday, 11/5/2022, to Monday, 11/7/2022, due to a problem with the sensor at the flare. The computer alarm did not sound when the flare went offline due to a technical issue. According to facility representatives, all gas was vented through the over/under valve when both the flare and the engine were offline.

The facility pulls a sample of the digester sludge from the pump at the bottom of the digester daily to test for volatile fatty acids and alkalinity.

The sludge is used for subsurface land application. Land application can occur when there are no crops on the field and the ground is not frozen. In total, the sludge is land applied two to three months per year. Sludge in the sludge lagoon is agitated prior to pick up by truck.

While the facility prefers the hydrogen sulfide levels to be low, meaning 100 ppm or lower, facility representatives stated that the facility does not have a level of hydrogen sulfide it considers to be ideal for operating conditions; it is only constrained by the permit requirement that the level to be under 1,000 ppm.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:

On 11/8/2022 at 5:38pm, winds were blowing SW at 10 mph. EPA noted strong odors on Xenia Drive and Herr Road, SW of the facility.

On 11/9/2022, EPA inspectors used an optical gas imaging camera (OGI, or FLIR) and toxic vapor analyzers (TVAs) during the tour of the facility. Inspectors observed visual emissions with the FLIR at the observation window of the anaerobic digester. The permit requires that the digester gas is sent to either the flare or the engine; inspectors used the OGI and TVAs to detect for other venting points in the system. Inspectors also observed visual emissions with the FLIR at the liquid waste unloading point when the cover mat was not covering the opening and while a truck actively unloaded material into the underground holding tank. *See Appendix D for notable TVA readings.*

During the inspection, facility representatives observed and shared that the gas quality measurements were 0.1 % oxygen, 305 ppm H₂S, 69% methane, and 39.6% CO₂.

Photos and/or Videos: were taken during the inspection.

Field Measurements: were taken during this inspection.

CLOSING CONFERENCE

☒ Provided U.S. EPA point of contact to the facility

Requested documents:

- Record of over/under valve opening alarms, if available
- Flare blower flowrate and capacity
- Set point on biomass feedstock tank PRV

Concerns: EPA noted the locations of high methane release detected by EPA monitoring equipment, including at the intake sewer where trucks unload feedstock into the below-ground holding tank, the observation window on the anaerobic digester, and the biomass feedstock tank pressure relief valve.

DIGITAL SIGNATURES

Report Author: _____

Section Supervisor: _____

Facility Name: Renergy, Inc. Dovetail Energy LLC
Facility Location: 1156 Herr Road, Fairborn, Ohio
Date of Inspection: November 9, 2022

APPENDICES AND ATTACHMENTS

1. Appendix A: Digital Image Log
2. Appendix B: Digital Video Log
3. Appendix C: FLIR Video Log
4. Appendix D: Field Measurement Data

Facility Name: Renergy, Inc. Dovetail Energy LLC
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APPENDIX A: DIGITAL IMAGE LOG

1. Inspector Name: Tess Russell	2. Archival Record Location: ERC
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Image Number	File Name	Date and Time (incl. Time zone and DST)	Description of Image
1	IMG_0278.JPG	2022:11:09 09:05:01	Entry point of feedstock from trucks to holding tank
2	IMG_0279.JPG	2022:11:09 09:05:01	Entry point of feedstock from trucks to holding tank (duplicate)
3	IMG_0280.JPG	2022:11:09 09:24:48	Gasket connection, Under-Over Valve
4	IMG_0281.JPG	2022:11:09 09:24:49	Gasket connection, Under-Over Valve (duplicate)
5	IMG_0282.JPG	2022:11:09 09:29:39	Point of connection between outer dome and DP tank
6	IMG_0283.JPG	2022:11:09 09:29:39	Point of connection between outer dome and DP tank (duplicate)
7	IMG_0284.JPG	2022:11:09 09:29:47	Point of connection between outer dome and DP tank, close-up
8	IMG_0285.JPG	2022:11:09 09:29:47	Point of connection between outer dome and DP tank, close-up (duplicate)
9	IMG_0286.JPG	2022:11:09 09:36:25	Mulch for controlling odors from released air from basement
10	IMG_0287.JPG	2022:11:09 09:40:34	Gasket + insulation, piping allows release of sludge when needed
11	IMG_0288.JPG	2022:11:09 09:40:34	Gasket + insulation, piping allows release of sludge when needed (duplicate)
12	IMG_0289.JPG	2022:11:09 09:50:12	Bottom of flare
13	IMG_0290.JPG	2022:11:09 09:55:58	Digester gas line to the engine
14	IMG_0291.JPG	2022:11:09 09:55:58	Digester gas line to the engine (duplicate)
15	IMG_0292.JPG	2022:11:09 10:01:47	Sludge lagoon, with OEPA air emissions testing
16	IMG_0293.JPG	2022:11:09 10:02:51	Surface of sludge lagoon
17	IMG_0294.JPG	2022:11:09 10:02:51	Surface of sludge lagoon (duplicate)
18	IMG_0296.JPG	2022:11:09 10:39:27	PRV on top of biomass feedstock tank
19	IMG_0297.JPG	2022:11:09 10:42:42	PRV on top of biomass feedstock tank, with liquid

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APPENDIX B: DIGITAL VIDEO LOG

1. Inspector Name: Tess Russell	2. Archival Record Location: ERC
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Video Number	File Name	Date and Time (incl. Time zone and DST)	Description of Video
1	MVI_0295.MP4	11/9/2022 10:02	Surface of sludge lagoon, popping bubbles of emissions

APPENDIX C: FLIR VIDEO LOG

1. Inspector Name: Natalie Schulz	2. Archival Record Location: ERC
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Video Number	File Name	Date and Time (incl. Time zone and DST)	Description of Video
1	SEQ_0570.seq	10:02 a.m., CST	Uncovered loading area
2	SEQ_0571.seq	10:03 a.m., CST	Uncovered loading area
3	SEQ_0572.seq	10:04 a.m., CST	Truck unloading into holding tank
4	SEQ_0573.seq	10:24 a.m., CST	Observation window on anaerobic digester

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APPENDIX D: FIELD MEASUREMENT DATA

TVA Measurements

Location	EPA Reading 1	EPA Reading 2	Notes	Associated Image # in Appendix A, if any
Manhole – Holding Tank	1.33%	1.4%	Open manhole; truck actively discharging waste into holding tank	#1-2
Basement catch basin	25 ppm		Where spills in the basement can accumulate; visible spill/solid residue	
Insulation of the over/under valve gasket	143 ppm		Visible signs of cracks in the gasket insulation	#3-4
Connection between dome and digester	160 ppm	60 ppm	Left of the over/under valve	#5-8
Observation window on digester	1.3%	1.63%	Visible signs of cracks in the gasket insulation	
Air release from dome	32 ppm		Representative stated emission release here may indicate rips in the inner dome	
Sludge discharge gasket	6.2 ppm		Bottom of digester; where hose can allow sludge discharge; Visible signs of cracks in the gasket insulation	#10-11
Inside flare housing	8.9 ppm			#12
Gas pipe to engine	30 ppm		Below where the line closed to prevent gas flow to the engine	#13-14
Sludge Lagoon 1	97 ppm		Over the side, numerous feet above the surface	#15-17
Biomass feedstock tank PRV	1.5%	1.0%	Visible liquid/possible condensate dripping; surrounding discoloration	#18-19

Calibration and Instrument Information

EPA used two ThermoFisher Toxic Vapor Analyzers 2020 (TVA2020).

- Brian Dickens (BD) used SL1555 for the duration of the survey.
- Tess Russell (TR) used B37057 for the duration of the survey.
- Shane Eagle and Jeff Williamson were sometimes shown readings on EPA instruments for visual confirmation of high readings

	SL1555	B37057
7:45 calibration reading, 503.1 ppm	497	510
7:45 calibration reading, 1960 ppm	1995	2030

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7:45 calibration reading, 10,000 ppm	9997	1%
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EPA calibration gases

Manufacturer	Composition	Lot #	Expiration
Air Systems International	Ultra zero air (THC <0.1ppm)	304-402520136-1	8/25/2024
GASCO	Methane in air 503.1ppm	304-402518883-1	8/15/2026
GASCO	Methane in air 1960 ppm	304-402110299-1	5/11/2025
GASCO	Methane in air 10,000 ppm	304-402110298-1	5/11/2025